REMARKS

This application has been carefully reviewed in light of the Office Action dated November 29, 2005. Claims 1 , 3 to 5 and 7 to 14 are pending in the application, with Claims 2 and 6 having been cancelled. Claims 1, 3 to 5, 7 and 12 have been amended, and Claims 1 and 12 are in independent form. Reconsideration and further examination are respectfully requested.

In the Office Action, Claims 1 to 5 and 12 to 14 were rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,379,335 (Griesmer); Claims 6 to 8 and 11 were rejected under 35 U.S.C. § 103(a) over Griesmer in view of U.S. Patent No. 6,047,042 (Khutoryansky); and Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) over Griesmer in view of U.S. Patent No. 6,404,851 (Possin). Reconsideration and withdrawal are respectfully requested.

The present invention generally concerns X-ray imaging in which emitted X-rays are received through a selected grid to obtain X-ray image data. A quantity of emitted X-rays is detected using an AEC detector, and a signal is output based on the detected quantity of emitted X-rays. According to one feature of the invention, a gain of exposure detection elements forming a part of the AEC detector is corrected by gain-correction data according to the selected grid in the AEC detector.

By virtue of the foregoing, in which a gain of exposure detection elements forming a part of an AEC detector is corrected by gain-correction data according to a selected grid in the AEC detector, gain-correction of the AEC detector is adequately performed even for different grid configurations.

Referring specifically to the claims, independent Claim 1 as amended is directed to an X-ray imaging apparatus. The apparatus comprises X-ray generation means for emitting X rays, and an X-ray detector on which a grid selected from a plurality of different types of grids is removably mountable, wherein the X-ray detector receives the X-rays emitted from the X-ray generation means, and wherein the X-ray detector obtains X-ray image data. The X-ray detector includes an automatic exposure control (AEC) detector which includes plural exposure detection elements, the AEC detector for detecting the quantity of X-rays emitted from the X-ray generation means and for outputting a signal based on the detected quantity. In addition, the apparatus comprises driving means for driving the X-ray generation means based on the signal output from the AEC detector. A gain of the exposure detection elements is corrected by gain-correction data according to the selected grid in the AEC detector.

Independent Claim 12 as amended is directed to a method for controlling an X-ray imaging apparatus. The method comprises the steps of emitting X-rays, and changing the X-rays received through a selected grid into X-ray image data. The method also includes the steps of detecting a quantity of emitted X-rays using an AEC detector and outputting a signal based on the detected quantity, and stopping the X-ray emission based on the signal. A gain of exposure detection elements forming a part of the AEC detector is corrected by gain-correction data according to the selected grid in the AEC detector.

The applied art is not seen to disclose or to suggest the features of the invention of the subject application. In particular, the Griesmer, Khutoryansky and Possin patents are not seen to disclose or suggest at least the features that a gain of exposure detection elements forming a part of an AEC detector is corrected, and that the gain is corrected based on gain-correction data according to a selected grid in the AEC detector.

As understood by Applicants, Griesmer discloses a radiographic imaging system having a radiation source, a controller for controlling the start of radiation production, and an automatic exposure control (AEC) means. The AEC means is comprised of a radiation sensor and a photo-timing means, with the photo-timing means being operatively connected to the controller. The radiation sensor senses the radiation impinging thereon and transmits an signal representative thereof to the photo-timing means. When the photo-timing means determines that a predetermined amount of radiation has been received by the radiation detector, the photo-timing means signals the controller to terminate the radiation exposure. See Griesmer, column 6, lines 6 to 21.

Although Griesmer may be seen to teach that radiation exposure is controlled based on feedback from an AEC means, it is not seen to disclose or suggest the gain of exposure detection elements forming a part of an AEC detector is corrected, muchless that gain-correction data for correcting the gain of the exposure detection elements is in accordance with a selected grid. Rather, Griesmer merely teaches that the controller terminates radiation exposure when a predetermined amount of radiation has been received, as determined by a photo-timing means.

In the rejection of now-cancelled Claim 2, the Office Action took the position that Griesmer teaches that correction data relates to which of the plurality or none of different types of grids is mounted on the X-ray detector, citing to column 7, lines 30 to 35 of Griesmer.

The cited portion of Griesmer discloses that theoretical and empirical data is determined which relates to the time for a plurality of grids of different sizes and masses to accelerate to a substantially constant velocity between end points. This data is translated into a time value t_2, which the controller can address to synchronize system operation.

Although Griesmer may be seen to teach that a time value t_2 relating to acceleration properties of different grids is determined, Griesmer is not see to teach that gain of exposure detection elements forming a part of an AEC detector is corrected. Rather, Griesmer discloses that the controller can synchronize system operation based on time values, such as t_2. Accordingly, Griesmer is not seen to disclose or suggest that a gain of exposure detection elements forming a part of an AEC detector is corrected by gain-correction data according to a selected grid in the AEC detector.

In addition, Khutoryansky and Possin have been reviewed and are not seen to compensate for the deficiencies of Griesmer.

Accordingly, based on the foregoing amendments and remarks, independent Claims 1 and 12 as amended are believed to be allowable over the applied references.

The other claims in the application are each dependent from the independent claims and are believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

Turning to a formal matter, the initialed copy of the Form PTO-1449 provided with the Office Action, corresponding to the Information Disclosure Statement filed May 14, 2004, was only initialed with respect to the first listed reference. The second reference was not initialed. Applicant therefore respectfully requests that the Examiner return another initialed copy of the Form PTO-1449 which indicates that both listed references have been considered.

Finally, an additional Information Disclosure Statement accompanies this Amendment.

No other matters being raised, it is believed that the entire application is fully in condition for allowance, and such action is courteously solicited.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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